Claims

1. A device for the spectral selection and detection of the spectral regions of a light beam (1), said selection unit (2) comprising means (3) for spectrally splitting the light beam, and means (6, 11) for blocking a spectral region and reflecting at least part of the unblocked spectral region, said detection unit comprising detectors (8) which are arranged in the beam path of the blocked spectral region and in the beam path of the reflected spectral region, characterized in that detectors (8) that have different designs and different detection properties or detection methods are provided.

2. The device according to Claim 1, characterized in that several means (6, 11) for blocking and reflecting spectral regions as well as detectors (8, 13) are arranged in a cascade so that the blocked or reflected spectral region is detected and the reflected or blocked spectral region is once again blocked or reflected and detected, and in that detectors (8, 13) that have different designs are provided in the various cascades (4, 12).

3. The device according to Claim 2, characterized in that detectors (8, 13) that have different designs are provided in the various cascades (4, 12).

4. The device according to one of Claims 1 to 3, characterized in that at least three spectral regions can be selected and detected per cascade (4, 12).

5. The device according to one of Claims 1 to 4, characterized in that the entire spectrum can be divided into certain, predefinable fractions such as, for example, 10% to 90% spectral fraction.

6. The device according to one of Claims 1 to 4, characterized in that the spectral region can be divided by means of a neutral splitter in the manner of a neutral spectral division.

7. The device according to one of Claims 1 to 4, characterized in that the spectral region can undergo polarization-dependent division.

8. The device according to one of Claims 1 to 7, characterized in that the selection units (2) and the detection units are combined in a module.

9. The device according to one of Claims 1 to 8, characterized in that, especially for purposes of detecting fluorescence, at least one photomultiplier is provided as the detector (8, 13).

10. The device according to one of Claims 1 to 9, characterized in that, especially for purposes of quicker measurements, at least one arrangement of photodiodes as the detector (8, 13) is provided.

11. The device according to one of Claims 1 to 10, characterized in that, particularly in the case of weak signals, an arrangement of APDs (Avalanche Photo-Diodes) is provided as the detector (8, 13).

12. The device according to Claim 11, characterized in that the APDs are arranged in the first cascade (4).

13. The device according to one of Claims 1 to 12, characterized in that the means (6, 11) for blocking and reflecting are configured in such a way that only one cascade (4 or 12) is active at any given point in time.

14. The device according to one of Claims 1 to 12, characterized in that the means (6, 11) for blocking and reflecting are configured in such a way that at least two of the cascades (4, 12) are simultaneously active.

15. The device according to one of Claims 1 to 14, characterized in that the means (6, 11) for blocking and reflecting spectrally split the light beam (5) into predefinable ratios – preferably in a variable manner.

16. The device according to one of Claims 1 to 15, characterized in that the selection unit (2) for blocking and reflecting the spectral regions (2) comprises mirror slides (6, 11) that can be opened entirely or only partially.

17. The device according to one of Claims 1 to 16, characterized in that the cascades (4, 12) are arranged flat.

18. The device according to one of Claims 1 to 16, characterized in that the cascades (4, 12) are arranged three-dimensionally.

19. The device according to one of Claims 1 to 18, characterized in that optical means (9, 10) for adapting the individual images are provided between the cascades (4, 12) and the detection branches.

20. The device according to Claim 19, characterized in that the optical means (9, 10) serve to image split focus lines into the next cascade.

21. The device according to Claim 19 or 20, characterized in that the optical means (9, 10) comprise lenses or lens arrangements.

22. The device according to one of Claims 1 to 21, characterized in that, directly in front of a detector (8, 13), for example, in front of the APDs, optical means (7, 14) are provided to reverse the spectral splitting.

23. The device according to Claim 22, characterized in that prisms are provided as optical means (7, 14).

24. The device according to one of Claims 1 to 23, characterized in that shutters that open for detection purposes are arranged in the beam path in front of the detectors (8, 13).

25. The device according to Claim 24, characterized in that the shutters are configured in such a way that they close automatically when too much light strikes the detectors during the detection.

26. The device according to one of Claims 1 to 25, characterized in that the detectors (8, 13) can be cooled.

27. The device according to one of Claims 1 to 26, characterized in that electronics adapted to the specific type of detector are connected downstream from the detectors (8, 13).

28. The device according to one of Claims 1 to 27, characterized in that the cabling of the individual detectors (8, 13) is adapted in terms of the cable length, resistance, impedance and the like, to the specific type of detector.

29. A scanning microscope, preferably a confocal laser scanning microscope, characterized by a device according to one of Claims 1 to 28.